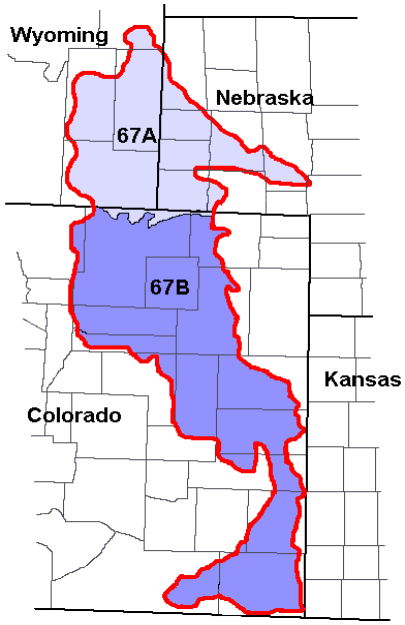
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Type: Rangeland

Site Name: Sandy

Site ID: R067BY024CO

Major Land Resource Area: 67B – Central High Plains, Southern Part

Physiographic Features

This site occurs on level to hilly uplands and plains.

Landform: hill, plain

Aspect: N/A

	Minimum	Maximum
Elevation (feet):	3800	5600
Slope (percent):	0	9
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	very low	medium

Climatic Features

The mean average annual precipitation varies from 12 to 16 inches per year depending on location and ranges from less than 8 inches to over 20 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year but averages 35 to 45 inches per year. Winds are estimated to average about 9 miles per hour annually, ranging from 10 miles per hour during the spring to 9 miles per hour during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring periods of high winds with gusts to more than 90 miles per hour.

The average length of the growing season is 142 days, but varies from 129 to 154 days. The average date of first frost in the fall is September 28 and the last frost in the spring is about May 9. July is the hottest month and December and January are the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to -35 degrees F or lower.

Growth of native cool season plants begins about March 15 and continues to about June15. Native warm season plants begin growth about May 15 and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	Minimum	Maximum
Frost-free period (days):	129	154
Freeze-free period (days):	151	178
Mean Annual Precipitation (inches):	12	16

Average Monthly Precipitation (inches) and Temperature (ºF):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.32	0.36	12.0	45.1
February	0.26	0.38	15.9	50.9
March	0.83	0.87	22.3	58.9
April	1.28	1.38	30.1	69.1
May	2.32	2.49	39.9	78.0
June	1.93	2.57	49.0	88.7
July	1.42	2.31	55.0	93.9
August	1.07	2.38	53.5	91.9
September	1.02	1.40	43.8	83.8
October	0.89	1.00	32.5	72.9
November	0.52	0.53	20.9	57.4
December	0.34	0.37	11.9	46.9

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
CO0945	Briggsdale	1948	2000
CO4076	Holly	1918	2000
CO9147	Windsor	1948	1990

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

Influencing Water Features

Wetland Description:	**System**	**Subsystem**	**Class**	**Sub-class**
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are very deep and well drained and are moderately rapid to moderately permeable. These soils occur on plains, hills, ridges, alluvial fans, toe slopes, foot slopes and terraces. The available water capacity is typically low or moderate. The pH ranges from neutral to moderately alkaline. The soil surface layer ranges from 3 to 10 inches thick and is typically fine sandy loam, sandy loam, or loamy sand. The soil moisture regime is typically aridic ustic with some ustic aridic in the drier areas. The soil temperature regime is mesic. These soils are susceptible to wind erosion.

The Historic Climax Plant Community (HCPC) should portray slight to no evidence of rills. Water flow paths, if present, are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. Wind scoured areas and pedestaled plants may exist in areas but should be minor. The soil surface is stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include: Ascalon, Bijou, Bresser, Fort Collins (sandy loam), Gilcrest, Haverson (sandy loam), Haxtun, Julesburg, Manter, Nunn (sandy loam), Olnest, Otero, Paoli, Platner (sandy loam), Stoneham (sandy loam), Sundance, Terry, Truckton and Vona.

Other soil series that have been correlated to this site include: none

Parent Material Kind: eolian deposits
Parent Material Origin: mixed
Surface Texture: fine sandy loam, sandy loam and loamy sand
Surface Texture Modifier: none

Subsurface Texture Group: sandy
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0
Subsurface Fragments > 3" (% Volume): 0

	Minimum	Maximum
Drainage Class:	well	somewhat excessive
Permeability Class:	moderately	moderately rapid
Depth (inches):	80	80
Electrical Conductivity (mmhos/cm)*:	0.00	2.00
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	6.6	8.4
Available Water Capacity (inches)*:	3	9
Calcium Carbonate Equivalent (percent)*:	0	5

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

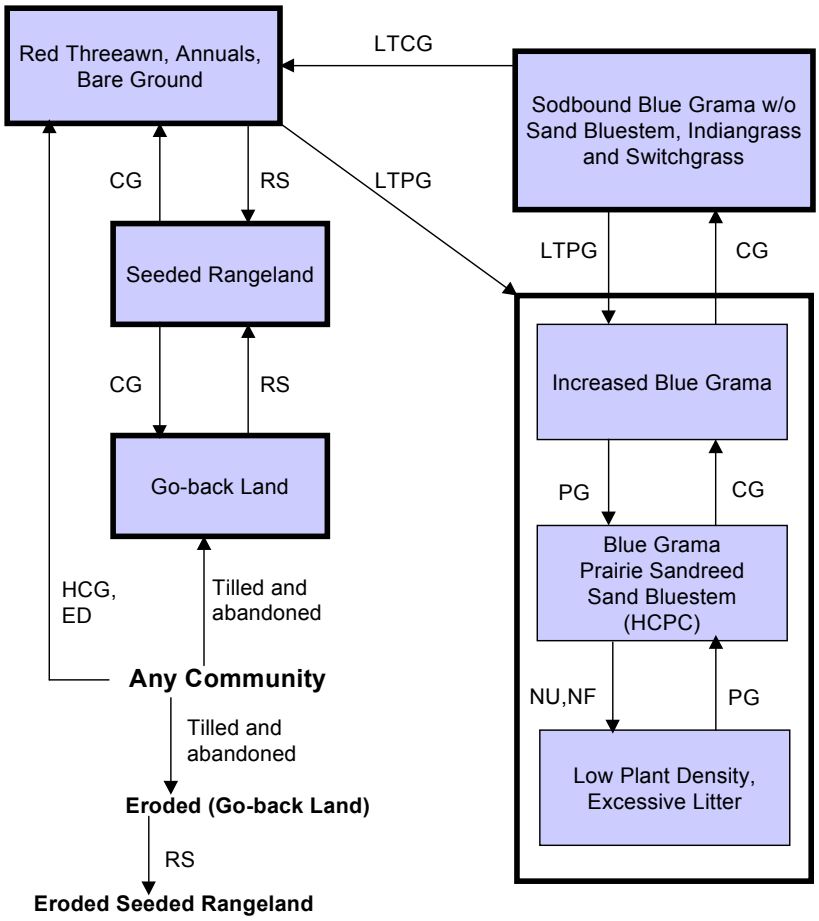
Ecological Dynamics of the Site:

Continuous grazing without adequate recovery opportunities following each grazing event during the growing season will cause blue grama to increase and eventually form a sodbound condition. Major warm season grasses such as sand bluestem, yellow Indiangrass and switchgrass will decrease in frequency and production. Key forbs and shrubs such as American vetch, purple prairie clover and western sandcherry will decrease also. Red threeawn, annuals and bare ground will increase with long term continuous grazing, heavy continuous grazing or excessive defoliation. Years of non-use (rest) or lack of fire will cause litter to accumulate and reduce plant density.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short durationl/time controlled grazing and historical accounts.

The following diagram illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes are discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity, **ED** - excessive defoliation, **HCG** - heavy continuous grazing, **HCPC** - Historic Climax Plant Community, **LTCG** - long term continuous grazing (>25 yrs), **LTPG** - long term prescribed grazing (>40 yrs), **PG** - prescribed grazing with adequate recovery period, **NF** - no fire, **NU** - non-use, **RS** - range seeding

Plant Community Composition and Group Annual Production

			Blue Grama, Prairie Sandreed, Sand Bluestem (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1*	*1155 - 1403*	*70 - 85*
blue grama	Bouteloua gracilis	BOGR2	1	330 - 495	20 - 30
prairie sandreed	Calamovilfa longifolia	CALO	1	330 - 495	20 - 30
sand bluestem	Andropogon hallii	ANHA	1	83 - 248	5 - 15
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	83 - 165	5 - 10
switchgrass	Panicum virgatum	PAVI2	1	83 - 165	5 - 10
western wheatgrass	Pascopyrum smithii	PASM	1	17 - 116	1 - 7
Indiangrass	Sorghastrum nutans	SONU2	1	17 - 83	1 - 5
little bluestem	Schizachyrium scoparium	SCSC	1	17 - 83	1 - 5
sideoats grama	Bouteloua curtipendula	BOCU	1	17 - 83	1 - 5
thickspike wheatgrass	Elymus elymoides ssp. elymoides	ELELE	1	0 - 83	0 - 5
prairie junegrass	Koeleria macrantha	KOMA	1	17 - 50	1 - 3
sand dropseed	Sporobolus cryptandrus	SPCR	1	17 - 50	1 - 3
Indian ricegrass	Achnatherum hymenoides	ACHY	1	17 - 33	1 - 2
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 17	0 - 1
sand paspalum	Paspalum setaceum	PASE5	1	0 - 17	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	17 - 83	1 - 5
other native grasses		2GP	1	0 - 83	0 - 5
FORBS			*2*	*165 - 248*	*10 - 15*
American vetch	Vicia americana	VIAM	2	17 - 33	1 - 2
dotted gayfeather	Liatris punctata	LIPU	2	17 - 33	1 - 2
narrowleaf penstemon	Penstemon angustifolius	PEAN4	2	17 - 33	1 - 2
pacific peavine	Lathyrus polymorphus	LAPO2	2	17 - 33	1 - 2
prairie spiderwort	Tradescantia occidentalis	TROC	2	17 - 33	1 - 2
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	17 - 33	1 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	17 - 33	1 - 2
upright prairie coneflower	Ratibida columnifera	RACO3	2	17 - 33	1 - 2
cutleaf evening-primrose	Oenothera coronopifolia	OECO2	2	0 - 17	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 17	0 - 1
heath aster	Symphyotrichum ericoides	SYERE	2	0 - 17	0 - 1
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 17	0 - 1
nuttails evolvulus	Evolvulus nuttallianus	EVNU	2	0 - 17	0 - 1
rush skeletonplant	Lygodesmia juncea	LYJU	2	0 - 17	0 - 1
silverleaf scurfpea	Pediomelum argophyllum	PEAR6	2	0 - 17	0 - 1
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	2	0 - 17	0 - 1
stickleaf mentzelia	Mentzelia decapetala	MEDE2	2	0 - 17	0 - 1
Texas croton	Croton texensis	CRTE4	2	0 - 17	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 17	0 - 1
winged buckwheat	Eriogonum alatum	ERAL4	2	0 - 17	0 - 1
woolly locoweed	Astragalus mollissimus	ASMO7	2	0 - 17	0 - 1
wormwood	Artemisia dracunculus	ARDR4	2	0 - 17	0 - 1
other native forbs		2FP	2	33 - 83	2 - 5
SHRUBS			*3*	*83 - 248*	*5 - 15*
western sandcherry	Prunus pumila var. besseyi	PRPUB	3	50 - 83	3 - 5
fourwing saltbush	Atriplex canescens	ATCA2	3	17 - 50	1 - 3
spreading buckwheat	Eriogonum effusum	EREF	3	17 - 33	1 - 2
sand sagebrush	Artemisia filifolia	ARFI2	3	0 - 33	0 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 17	0 - 1
fringed sagebrush	Artemisia frigida	ARFR4	3	0 - 17	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 17	0 - 1
purple pincushion	Escobaria vivipara var. vivipara	ESVIV	3	0 - 17	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 17	0 - 1
other native shrubs		2SHRUB	3	17 - 83	1 - 5

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	600 -	1300	- 1690
FORBS	150 -	200	- 255
SHRUBS	50 -	150	- 255
TREES			
TOTAL	800 -	1650	- 2200

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. *RV - Representative Value.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition table shown above has been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed and new ones may be added. None of these plant communities should necessarily be thought of as "Desired Plant Communities". According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores, is well suited for grazing by domestic livestock, and can be found on areas that are properly managed with grazing that allows adequate recovery periods following each grazing occurrence during the growing season.

The potential vegetation is about 70-85% grasses and grass-like plants, 10-15% forbs and 5-15% woody plants. The dominant tall warm season grasses are prairie sandreed, sand bluestem and switchgrass. Blue grama dominates the understory. Important cool season grasses and grass-likes are needleandthread and sun sedge. Key forbs and shrubs are American vetch, pacific peavine, purple prairie clover, western sandcherry and leadplant.

This plant community is well adapted to the Northern Great Plains climatic conditions and is relatively resistant to many disturbances except prolonged continuous grazing, sodbusting, urban and other development. The diversity in plant species allows for high drought tolerance. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. This is a sustainable plant community in terms of soil stability, watershed function and biologic integrity.

Production in this community can vary from 800 to 2200 pounds of air-dry vegetation per acre per year depending on weather conditions and averages 1650 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6709
Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	7	25	35	15	10	5	1	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will move this plant community toward the *Increased Blue grama Plant Community*.
- Non-use (rest) or lack of fire will move this plant community toward the *Low Plant Density, Excessive Litter Plant Community*.
- Prescribed grazing that allows adequate recovery opportunity following each grazing event with proper stocking will maintain the *Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC)*.

Increased Blue Grama Plant Community

This plant community evolves with continuous grazing. When compared to the Historic Climax Plant Community; sand bluestem, yellow Indiangrass, prairie sandreed, switchgrass, leadplant and western sandcherry have decreased in frequency and production. Blue grama is the dominant grass species. Sand dropseed, red threeawn, hairy goldaster, croton, slimflower scurfpea, western ragweed, stickleaf, heath aster, lupine, loco, milkvetch and cactus have increased. Soils that have a sandy loam or coarser subsoil will show an increase in sand sagebrush.

Continuous spring grazing with summer deferment will reduce the cool season component (needleandthread, western wheatgrass, sun sedge) of this plant community and increase the warm season component. Continuous summer grazing with spring deferment will reduce the warm season component (sand bluestem, yellow Indiangrass, prairie sandreed, switchgrass) of this plant community and increase the cool season component.

The risk of losing key tall warm season grasses, important forbs and shrubs is a major concern. Prescribed grazing with adequate recovery periods between grazing events will enable the land user to maintain the vegetation or move it toward the HCPC. Continuous grazing will take this plant community past an ecological/economic threshold resulting in costly revegetation practices or require many years of prescribed grazing to reverse the process.

Blue grama is increasing at the expense of the tall grasses and deep-rooted shrubs. Water cycle, nutrient cycle and energy flow are becoming impaired do to a shift in root structure and species composition. Less litter is being produced. This is an early stage of desertification.

Production in this community can vary from 400 to 1200 pounds of air-dry vegetation per acre per year depending on weather conditions and averages 900 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6710
Growth curve name: Warm season dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	20	10	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will move this plant community across an ecological threshold toward the *Sodbound Blue Grama without Sand Bluestem, Yellow Indiangrass and Switchgrass Plant Community.*
- Prescribed grazing that allows adequate recovery periods following grazing occurrences and proper stocking can bring this plant community back to the *Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC).*

Low Plant Density, Excessive Litter Plant Community

This plant community occurs when grazing is removed for long periods of time in the absence of fire. Most of the species occurring in the HCPC are present in this plant community but are reduced in abundance and production. Much of the nutrients are tied up in excessive litter. The semiarid environment and the absence of animal traffic to break down litter slow nutrient recycling. Aboveground litter also limits sunlight from reaching plant crowns. Many plants, especially bunchgrasses die off. Thick litter and absence of grazing or fire reduce seed germination and establishment.

This plant community is at risk of losing many key species and if left ungrazed or ungrazed without fire can go to a vegetative state resembling the *Red Threeawn, Annuals, Bare Ground Plant Community*. This plant community will change rapidly if plant manipulation is allowed to occur (grazing by domestic livestock or possibly fire).

In advanced stages, plant mortality can increase and erosion potential increases as bare areas increase.

Production can vary from 300 to 1500 pounds of air-dry vegetation per acre per year depending on weather conditions and the plants that are present.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6711
Growth curve name: Warm season dominant, cool season sub-dominant, excess litter; MLRA-67B; upland coarse texture soil.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	35	17	10	5	3	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing that allows for adequate recovery periods following each grazing event and proper stocking will shift this plant community back to the *Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC).*

Sodbound Blue Grama without Sand Bluestem, Indiangrass and Switchgrass Plant Community

This plant community evolves with longer term continuous grazing caused by lack of adequate recovery periods between grazing events. Sodbound blue grama dominates this plant community. Large amounts of sand dropseed and red threeawn are common. Louisiana sage, lupine, stickleaf, croton, hairy goldaster, loco, wormwood, fringed sage and soapweed have increased. Sand sagebrush may increase on sandy loam or coarser subsoils. Sand bluestem, yellow Indiangrass, switchgrass, leadplant, western sandcherry and fourwing saltbush have been removed. Prairie sandreed and needleandthread may persist in remnant amounts protected by remaining shrubs. Western wheatgrass may be found in small depressions. This plant community is present on most of the Sandy ecological site in the Central High Plains today.

A significant amount of production and diversity has been lost when compared to the HCPC. The soil is stable at this stage however, the nutrient cycle, water cycle, community dynamics and energy flow are all impaired do to the substantial increase of blue grama and loss of tall warm season grasses, nitrogen fixing legumes and shrubs. Desertification is advanced.

Production varies from 200 to 900 pounds of air-dry vegetation per acre per year depending on weather and averages 700 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6710
Growth curve name: Warm season dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	20	10	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Long term continuous grazing without adequate recovery periods between grazing events will move this plant community to the *Threeawn, Annuals and Bare Ground Plant Community*. This transition may take greater than 25 years to accomplish.
- Long term prescribed grazing with adequate recovery periods between grazing events and proper stocking will be needed to bring this plant community back to the *Increased Blue Grama Plant Community* and eventually to the *HCPC* assuming an adequate seed/vegetative source is available. This process may take greater than 40 years to accomplish.

Red Threeawn, Annuals, Bare Ground Plant Community

This plant community can develop by long term continuous grazing, heavy continuous grazing and/or occupation by prairie dogs. Red threeawn is the dominant species. Sand dropseed may also be present in varying amounts. A number of annual plants such as Russian thistle, kochia and cheatgrass will increase or invade. Field bindweed is often present on prairie dog towns.

Litter levels are extremely low. The nutrient cycle, water cycle, and energy flow are greatly reduced. Erosion is occurring. Pedestalling is evident. Organic matter/carbon reserves are greatly reduced. Desertification is obvious.

Production can vary from 50 to 400 pounds of air-dry vegetation per acre per year depending on weather conditions and the plants that are present.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6710
Growth curve name: Warm season dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	20	10	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Long term prescribed grazing that allows for adequate recovery periods between each grazing event and proper stocking will be needed to bring this state back to the *Blue Grama, Prairie Sandreed, Sand Bluestem (HCPC)* or associated successional plant community stages assuming an adequate seed/vegetative source is available. Expect this transition to take greater than 40 years to accomplish.
- Range seeding can be used to create *Seeded Rangeland.* Revegetation practices would be very costly.

Go-back Land

Go-back land is created when the soil is tilled or farmed (sodbusted) and abandoned. All of the native plants are destroyed, soil organic mater is reduced, soil structure is changed and a plowpan or compacted layer is formed. Residual synthetic chemicals often remain from past farming operations and erosion processes may be active.

Go-back land evolves through several plant communities beginning with an early annual plant community, which initiates the revegetation process. Plants such as Russian thistle, kochia and other annuals begin to establish. These plants give some protection from erosion and start to build minor levels of soil organic matter. This early annual plant community lasts for two to several years. Red threeawn, sand dropseed and several other early perennials can dominate the plant community for five to eight years or more. Eventually other native species become reestablished.

Transitions or pathways leading to other plant communities are as follows:

- Range seeding followed with prescribed grazing can be used to convert *Go-back Land* to *Seeded Rangeland.*

Go-back Land (eroded)

Eroded go-back land is created where tillage or farming and severe erosion has occurred. If the parent material that the original soil developed from is lost, then another ecosite will evolve. If the same parent material is present, then re-seeding or the slow process of developing soil and vegetation will start by similar processes as shown in the non-eroded *Go-back Land* above. This is a very slow process (100 years or more).

Seeded Rangeland

This plant community can vary considerable depending on how eroded the soil was, the species seeded, the stand that was established, how long ago the stand was established and the management of the stand since establishment. Prescribed grazing that allows adequate recovery periods following each grazing event will help maintain this plant community and eventually move it towards the HCPC.

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods following each grazing event will move this plant community to the *Threeawn, Annuals, Bare Ground Plant Community* or to a plant community resembling *Go-back Land.*

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Blue Grama, Prairie Sandreed, Sand Bluestem Plant Community (HCPC)
The structural diversity in the plant community found on the HCPC is attractive to a number of wildlife species. Common bird species expected on the HCPC include Cassin's and Brewer's sparrow, chestnut collared longspur, lark bunting, western meadowlark, and ferruginous and Swainson's hawks. The combination of mid-tall grasses and shrubs provides habitat for greater and lesser prairie chicken in the eastern parts of this site. Scaled quail may also use this community.
White-tailed and black-tailed jackrabbit, badger, pronghorn, coyote, swift fox, plains pocket gopher, long-tailed weasel, and several species of mice are mammals that commonly use this plant community. Reptiles using this community include western rattlesnake, bullsnake, plains garter snake western hognose snake, racer, western box turtle, and six-lined racerunner.

Increased Blue Grama Plant Community
All HCPC species are expected in this plant community, however, the loss of some of the vegetative structural diversity in this plant community make it less attractive to many HCPC species.

Low Plant Density, Excessive Litter and Sodbound Blue Grama Plant Communities
As these communities develop into an open landscape the wildlife species will shift from the HCPC species toward the typical shortgrass prairie species such as horned lark, killdeer, long-billed curlew, McCown's longspur, and ferruginous hawk. In addition, mountain plover, black-tailed prairie dog, and burrowing owl might use these communities where slopes are less than 5%.

Red Threeawn and Go-back Land Plant Communities
Mountain plover, black-tailed prairie dog, and burrowing owl are expected on these communities where slopes are less than 5%.

Seeded Rangeland
The wildlife species expected on seeded rangeland would be those listed for the plant community the seeding most resembles.

Other Potential Species
The plains spadefoot is the only common species of frog or toad inhabiting grasslands in Eastern Colorado. This species requires water for breeding. Tiger salamanders may be found on grassland sites, but require a water body for breeding. Either of these species may be found in any plant community if seasonal water requirements are met. Mule and white-tailed deer may use this ecological site for feeding, however the shrub cover is too low to provide escape or hiding cover. On ecological site locations near riparian areas, deer will use the vegetation for feeding. Big brown bats will use any plant community on this ecological site if a building site is in the area. The gray wolf, black-footed ferret, and wild bison used this ecological site in historic times. The wolf and ferret are thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

Animal Preferences (Quarterly – 1,2,3,4†)

Common Name	Cattle				Sheep				Horses				Deer				Antelope				Bison				Elk			
Grasses and Grass-likes																												
blue grama	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D
Indian ricegrass	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D
Indiangrass	U	D	P	D	U	D	U	U	U	D	P	D	U	D	U	U	U	D	U	U	U	D	P	D	U	D	P	D
little bluestem	U	D	P	U	N	D	D	N	U	D	P	U	N	D	D	N	N	D	D	N	U	D	P	U	U	D	P	U
needleandthread	U	P	D	D	N	D	N	D	U	P	D	D	N	D	N	D	N	D	N	D	U	P	D	D	U	P	D	D
prairie junegrass	U	D	U	D	N	D	N	U	U	D	U	D	N	D	N	U	N	D	N	U	U	D	U	D	U	D	U	D
prairie sandreed	U	D	D	U	U	D	U	U	U	D	D	U	U	D	U	U	U	D	U	U	U	D	D	U	U	D	D	U
red threeawn	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
sand bluestem	U	D	P	D	U	D	U	U	U	D	P	D	U	D	U	U	U	D	U	U	U	D	P	D	U	D	P	D
sand dropseed	U	D	U	N	N	U	D	N	U	D	U	N	N	U	D	N	N	U	D	N	U	D	U	N	U	D	U	N
sand paspalum	N	U	U	N	N	U	N	N	N	U	U	N	N	U	N	N	N	U	N	N	N	U	U	N	N	U	U	N
sideoats grama	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U
switchgrass	U	D	D	U	U	D	U	U	U	D	D	U	U	D	U	U	U	D	U	U	U	D	D	U	U	D	D	U
thickspike wheatgrass	U	D	D	U	N	D	N	N	U	D	D	U	N	D	N	N	N	D	N	N	U	D	D	U	U	D	D	U
western wheatgrass	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D
sun sedge	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D
Forbs																												
American vetch	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D
cutleaf evening-primrose	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	U	U	U	U
dotted gayfeather	U	U	D	U	U	D	P	U	U	U	D	U	U	D	P	U	U	D	P	U	U	U	D	U	U	U	D	U
hairy goldaster	U	U	D	U	N	N	N	N	U	U	D	U	N	N	N	N	N	N	N	N	U	U	D	U	U	U	D	U
heath aster	U	U	D	U	U	U	P	U	U	U	D	U	U	U	P	U	U	U	P	U	U	U	D	U	U	U	D	U
Louisiana sagewort	U	U	U	U	U	U	D	U	U	U	U	U	U	U	D	U	U	U	D	U	U	U	U	U	U	U	U	U
narrowleaf penstemon	U	D	U	U	U	P	P	U	U	D	U	U	U	P	P	U	U	P	P	U	U	D	U	U	U	D	U	U
nuttails evolvulus	U	U	D	U	U	D	D	U	U	U	D	U	U	D	D	U	U	D	D	U	U	U	D	U	U	U	D	U
pacific peavine	U	D	U	U	U	P	P	U	U	D	U	U	U	P	P	U	U	P	P	U	U	D	U	U	U	D	U	U
prairie spiderwort	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	U	U	U	U
purple prairie clover	U	P	P	D	U	P	P	U	U	P	P	D	U	P	P	U	U	P	P	U	U	P	P	D	U	P	P	D
rush skeletonplant	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	U	U	U	U
scarlet globemallow	U	D	D	U	U	P	P	U	U	D	D	U	U	P	P	U	U	P	P	U	U	D	D	U	U	D	D	U
silverleaf scurfpea	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	U	U	U	U
slimflower scurfpea	N	N	N	N	N	U	U	N	N	N	N	N	N	U	U	N	N	U	U	N	N	N	N	N	N	N	N	N
stickleaf mentzelia	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	U	U	U	U
Texas croton	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	U	U	U	U
upright prairie coneflower	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	U	D	U
western ragweed	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U
winged buckwheat	U	U	D	U	U	U	U	U	U	U	D	U	U	U	U	U	U	U	U	U	U	U	D	U	U	U	D	U
woolly locoweed	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
wormwood	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Shrubs																												
broom snakeweed	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
fourwing saltbush	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P
fringed sagebrush	U	N	N	U	U	D	D	U	U	N	N	U	U	D	D	U	U	D	D	U	U	N	N	U	U	N	N	U
plains pricklypear	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
purple pincushion	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
sand sagebrush	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U
small soapweed	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D
spreading buckwheat	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
western sandcherry	D	P	P	D	D	U	U	D	D	P	P	D	D	U	U	D	D	U	U	D	D	P	P	D	D	P	P	D

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic
† Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) with normal growing conditions however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Blue Grama, Prairie Sandreed, Sand Bluestem (HCPC)	1650	0.52
Increased Blue Grama	900	0.29
Blue Grama Sod w/o Sand Bluestem, Indiangrass, Switchgrass	700	0.22
Low Plant Density, Excessive Litter	*	*
Red Threeawn, Annuals, Bare Ground	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable analysis.

* Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group A. Infiltration and runoff potential for this site varies from high to moderate depending on soil hydrologic group and ground cover. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

(067BY015CO) – Sands (formerly Deep Sands)
(067BY022CO) – Choppy Sands
(067BY002CO) – Loamy (formerly Loamy Plains)

Similar Sites

(067BY015CO) – Sands (formerly Deep Sands)
[higher production; more sand bluestem and sand sagebrush]
(067BY022CO) – Choppy Sands
[steep slopes, more western sandcherry]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site include: Harvey Sprock, Rangeland Management Specialist, NRCS; Ben Berlinger, Rangeland Management Specialist, NRCS; Chuck Ring, Rangeland Management Specialist, NRCS; Dave Cook, Rangeland Management Specialist, NRCS; Scott Woodall, Rangeland Management Specialist, NRCS; James Borchert, Soil Scientist, NRCS; Dave Sharman, Resource Conservationist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

This site is specific to Colorado (formerly Sandy Plains).

Field Offices

Akron, Brighton, Burlington, Byers, Cheyenne Wells, Eads, Flagler, Fort Collins, Fort Morgan, Greeley, Holly, Hugo, Kiowa, Lakewood Metro, Lamar, Longmont, Simla, Springfield, Sterling

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (http://hpccsun.unl.edu)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (http://wcc.nrcs.usda.gov)

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Site Description Approval

/s/ 03/25/2004

State Range Management Specialist Date